



1fw 1614
ATTORNEY DOCKET NO. 19044.0057U2
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)	
)	
Subramaniam Ananthan)	Art Unit: 1614
)	
Application No. 10/593,748)	Examiner: Unassigned
)	
Filing Date: September 22, 2006)	Confirmation No. 3021
)	
For: NONPEPTIDE INHIBITORS OF)	
MATRIX METALLOPROTEINASES)	

INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

NEEDLE & ROSENBERG, P.C.
Customer Number 23859
May 23, 2007

Sir:

Pursuant to the requirements of 37 C.F.R. § 1.56, submitted herewith on the accompanying Information Disclosure Statement List is a listing of documents known to Applicants and/or their attorneys. In accordance with 37 C.F.R. §1.98(a)(2), copies of any cited U.S. patent or U.S. patent application publication documents are not enclosed. Copies of any cited foreign patent document and/or any non-patent publication are enclosed.

This Information Disclosure Statement is believed to be filed in a timely manner pursuant to 37 C.F.R. § 1.97(b)(3), in that a first Office Action on the merits of the present patent application has not yet been mailed to Applicants.

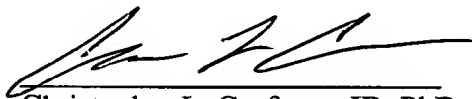
Consideration of the cited documents and making the same of record in the prosecution of the above-referenced application are respectfully requested.

ATTORNEY DOCKET NO. 19044.0057U2
Application No. 10/593,748

No fee is believed due; however, the Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 14-0629.

Respectfully submitted,

NEEDLE & ROSENBERG, P.C.



Christopher L. Curfman, JD, PhD
Registration No. 52,787

NEEDLE & ROSENBERG, P.C.
Customer Number 23859
(678) 420-9300
(678) 420-9301 (fax)

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8

I hereby certify that this correspondence, including any items indicated as attached or included, is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below.


Christopher L. Curfman, JD, PhD

May 23, 2007
Date



INFORMATION DISCLOSURE STATEMENT LIST

(Use as many sheets as necessary)

Complete if Known

Application Number	10/593,748
Filing Date	September 22, 2006
First Named Inventor	Subramaniam Ananthan
Group Art Unit	1614
Examiner Name	Unassigned

U.S. PATENT DOCUMENTS

Examiner's Initials	Cite No.	Document No.	Date	Name	Class	Subclass	Filing Date (if appropriate)
/G.S./	A1	5,977,408	November 2, 1999	Levin et al.	562	622	
/G.S./	A2	5,753,653	May 19, 1998	Bender et al.	514	227.5	

FOREIGN PATENT DOCUMENTS

Examiner's Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code	Date	Name	Translation Yes No
/G.S./	A3	WO 97/44315	November 27, 1997	Warner-Lambert	
	A4	WO 98/47494	October 29, 1998	British Biotech Pharmaceuticals Ltd.	
	A5	WO 98/16506	October 8, 1997	American Cyanamid Company	
	A6	WO 00/063165	October 26, 2000	Fujisaw Pharmaceutical	
	A7	WO 00/44711 A	August 3, 2000	American Cyanamid Company	
	A8	WO 02/055491	September 1, 2002	Bristol-Myers Squibb Company	
	A9	EP 818442	January 14, 1998	Pfizer Inc.	
	A10	EP 780386	October 2, 2002	F. Hoffman-La Roche AG et al.	

NON PATENT LITERATURE DOCUMENTS

Examiner's Initials	Cite No.	Non-Patent Citations (include Author, Title, Publisher, Relevant Pages, Date and Place of Publication)
G.S./	A11	Apfel et al., "Hydroxaminc acid derivatives as potent peptide deformylase inhibitors and antibacterial agents," <i>J. Med. Chem.</i> , 43:2324-2331 (2000)
	A12	Armarego et al., "Quinazolines. Part XIII. Synthesis and stereochemistry of trans- and cis-decahydroquinazolines," <i>J. Chem. Soc. (C)</i> , 1635-1641 (1969)
	A13	Auerbach et al., "Assays for angiogenesis: A review," <i>Pharm. Ther.</i> , 51:1-11 (1991)
	A14	Bailey et al., "Reduction of cyclic anhydrides with NaBH ₄ , versatile lactone synthesis," <i>J. Org. Chem.</i> , 35:3574-3576 (1970)
	A15	Beckett et al., "Recent advances in matrix metalloproteinase inhibitor research," <i>Drug Disc. Today</i> , 1:16-26 (1996)
	A16	Bernath et al., "Preparation and conformational study of partially saturated 3,1-benzoxazines, 3,1-benzoxazin-2-ones and 3,1-benzoxazine-2-thiones," <i>Tetrahedron</i> , 41:1353-1365 (1985)
	A17	Birkedal-Hansen et al., "Matrix metalloproteinase: A review," <i>Crit. Rev. Oral. Biol. Med.</i> , 4:197-250 (1993)
	A18	Bode et al., "The x-ray crystal structure of the catalytic domain of human neutrophil collagenase," <i>EMBO J.</i> , 13:1263-1269 (1994)
	A19	Brown, "MMP inhibitors in the treatment of cancer," <i>Med. Oncology</i> , 14:1-10 (1997)
	A20	Brown, "Clinical studies with MMP inhibitors," <i>APMIS</i> , 107:174-180 (1999)
	A21	Brown, "Ongoing trials with matrix metalloproteinase inhibitors," <i>Expert Opin. Invest. Drugs</i> , 9:2167-2177 (2000)
	A22	Burns et al., "Nanomolar inhibitors for two distinct biological target families for a single synthetic sequence: A next step in combinatorial library design?" <i>Angew. Chem. Int. Ed.</i> , 37:2848-2850 (1998)

Examiner Signature:

Date Considered

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT LIST

(Use as many sheets as necessary)

Complete if Known

Application Number	10/593,748
Filing Date	September 22, 2006
First Named Inventor	Subramaniam Ananthan
Group Art Unit	1614
Examiner Name	Unassigned

NON PATENT LITERATURE DOCUMENTS

Examiner's Initials	Cite No.	Non-Patent Citations (include Author, Title, Publisher, Relevant Pages, Date and Place of Publication)
/G.S./	A23	Caldwell et al., "Phosphinic acid inhibitors of matrix metalloproteinases," <i>Bioorg. Med. Chem. Lett.</i> , 6:323-328 (1996)
	A24	Cheng et al., "Design and synthesis of piperazine-based MMP inhibitors," <i>J. Med. Chem.</i> , 43:369-380 (2000)
	A25	Clark et al., "Computational methods for the prediction of drug-likeness," <i>Drug Discov. Today</i> , 5:49-58 (2000)
	A26	Cockett et al., "MMPs and metastatic cancer," <i>Biochem. Soc. Symp.</i> , 63:295-313 (1998)
	A27	Curren et al., "MMPs- their role in tumor invasion and metastasis," <i>Eur. J. Cancer</i> , 36:1621-1630 (2000)
	A28	Davidson et al., "The Inhibition of Matrix Metalloproteinase Enzymes," <i>Chem. Ind.</i> , 258-261 (1997)
	A29	De et al., "The next generation of MMP inhibitors: Design and synthesis," <i>Ann NY Acad Sci</i> 878:40-60 (1999)
	A30	Eddershaw et al., "ADME/PK - app to drug discovery," <i>Drug Disc. Today</i> , 5:409-414 (2000)
	A31	Finzel et al., "Structural characterizations of nonpeptidic thiadiazole inhibitors of matrix metalloproteinases reveal the basis for stromelysin selectivity," <i>Protein Sci.</i> , 7:2118-2126 (1998)
	A32	Freskos et al., "Discovery of a novel series of selective MMP inhibitors: Identification of the γ -sulfone-thiols," <i>Bioorg. Med. Chem. Lett.</i> , 9:943-948 (1999)
	A33	Galazka et al., "Spontaneous propeptide processing of mini-stromelysin-1 mutants blocked my APMA," <i>Biochem.</i> , 38:1316-1322 (1999)
	A34	Gatto et al., "BAY 12-9566, a novel inhibitor of MMPs with angiogenic activity," <i>Clin. Cancer Res.</i> , 5:3603-3607 (1999)
	A35	Gavuzzo et al., "Two crystal structures of human collagenase with primed and unprimed-side inhibitor," <i>J. Med. Chem.</i> , 43:3377-3385 (2000)
	A36	Getman et al., "Discovery of a novel class of potent HIV-1 protease inhibitors," <i>J. Med. Chem.</i> 36:288-291 (1993)
	A37	Goodly et al., "In vivo modulation of human tumor cell growth by normal human extracellular matrix," <i>Tumor Biology</i> , 15:326-336 (1994)
	A38	Gopurula et al., "A novel synthetic peptide inhibits tumor invasion and angiogenesis in human cell-biomatrix models," <i>Proc. Am. Assoc. Cancer. Res.</i> , 39:44, Abstract #301 (1998)
	A39	Gowravaram et al., "Inhibition of MMPs by hydroxamates containing heteroatom-based modifications of the P1 group," <i>J. Med. Chem.</i> , 38:2570-2581 (1995)
	A40	Harmat et al., "1,2-disubstituted cyclohexane derived tripeptide aldehydes as novel selective thrombin inhibitors," <i>Bioorg. Med. Chem. Lett.</i> , 8:1249-1254 (1998)
	A41	Heath et al., "Clinical potential of MMP inhibitors in cancer therapy," <i>Drugs</i> , 59:1043-1055 (2000)
	A42	Hidalgo et al., "Biotech company shares dive after drug failure," <i>BJM</i> , 321:1039 (2000)
	A43	Hidalgo et al., "Development of MMP inhibitors in cancer therapy," <i>JNCI</i> , 93:178-193 (2001)
	A44	Ikeda et al., "Inhibition of gelatinolytic activity in tumor tissues by MMP inhibitors-Application of film in situ zymography," <i>Clin. Cancer. Res.</i> , 6:3290-3296 (2000)
	A45	Keiner et al., "MMP and metastasis," <i>Can. Chemo. Pharm.</i> , 43:42-51 (1999)
	A46	Kennewell et al., "Synthesis of γ -aminobutyric acid analogues of restricted conformation-2-(aminometh)cycloalkancarboxylic acids," <i>J. Chem. Soc. Perkin. Trans. I</i> , 2563-2570 (1982)
	A47	Kiyama et al., "Homology modeling of gelatinase catalytic domains and docking simulations of novel sulfonamide inhibitors," <i>J. Med. Chem.</i> , 42:1723-1738 (1999)

Examiner Signature:

Date Considered

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT LIST

(Use as many sheets as necessary)

Complete if Known

Application Number	10/593,748
Filing Date	September 22, 2006
First Named Inventor	Subramaniam Ananthan
Group Art Unit	1614
Examiner Name	Unassigned

NON PATENT LITERATURE DOCUMENTS

Examiner's Initials	Cite No.	Non-Patent Citations (Include Author, Title, Publisher, Relevant Pages, Date and Place of Publication)
G.S./	A48	Kleinfeld <i>et al.</i> , "X-ray absorption studies of human MMP-2 bound to a selective mechanismbased inhibitor," <i>JBC</i> , 276:17125-17131 (2001)
	A49	Kleinman <i>et al.</i> , Basement membrane complexes with biological activity," <i>Biochem.</i> , 25:312-318 (1986)
	A50	Krumme <i>et al.</i> , "Hydroxamate derivatives of substrate-analogous peptides containing aminomalononic acid are potent inhibitors of matrix metalloproteinases," <i>FEBS Lett.</i> , 436:209-212 (1998)
	A51	Kruger <i>et al.</i> , "Hydroxamate-type MMP inhibitor Batimastat promotes liver matastasis," <i>Cancer Res.</i> , 61:1272-1275 (2001)
	A52	Kurokawa <i>et al.</i> , "Synthesis of Octahydro-11-oxodibenz[b,e]oxepins and -Octahydro-11-oxodibenz[b,e]thiepins," <i>Chem. Pharm. Bull.</i> 31:4312-4318 (1983)
	A53	Levin <i>et al.</i> , "The synthesis and biological activity of a novel series of diazepine MMP inhibitors," <i>Bioorg. Med. Chem. Lett.</i> , 8:2657-2662 (1998)
	A54	Levin <i>et al.</i> , "Heteroaryl and cycloalkyl sulfonamide hydroxamic acid inhibitors of matrix metalloproteinases," <i>Med. Chem. Lett.</i> , 11:239-242 (2001)
	A55	Levy <i>et al.</i> , "MMP inhibitors: A structure-activity study," <i>J. Med. Chem.</i> , 41:199-223 (1998)
	A56	Lovejoy <i>et al.</i> , "Crystal structure of MMP-1 and -13 reveal the structural basis for selectivity of collagenase complexed with an inhibitor," <i>Science</i> , 263:375-377 (1994)
	A57	MacDougall <i>et al.</i> , "MMP: multifunctional contributors in tumor progression," <i>Cancer Metastasis Rev.</i> , 14:351-362 (1995)
	A58	MacPherson <i>et al.</i> , "Discovery of CGS 27023A, a non-peptidic, potent, and orally active stromelysin inhibitor that blocks cartilage degradation in rabbits," <i>J. Med. Chem.</i> , 40:2525-2532 (1997)
	A59	Maki <i>et al.</i> , "Augmented anti-metastasis efficacy of a selective matrix metalloproteinase inhibitor, MMI-66, in combination with CPT-11," <i>Clin. Exp. Metastasis</i> , 19:519-526 (2002)
	A60	Matter <i>et al.</i> , "Quantitative structure - activity relationship of human neutrophil collagenase (MMP-8) inhibitors using comparative molecular field analysis and X-ray structure analysis," <i>J. Med. Chem.</i> , 42:1908-1920 (1999)
	A61	Matter <i>et al.</i> , "Affinity and selectivity of MMP inhibitors. A chemometric study," <i>J. Med. Chem.</i> , 42:4506-4523 (1999)
	A62	McCawley <i>et al.</i> , "MMP: multifunctional contributors in tumor progression," <i>Mol. Med. Today</i> , 64:149-156 (2000)
	A63	Michaelides <i>et al.</i> , "Recent advances in MMP inhibitors in cancer therapy," <i>Curr. Pharma. Design</i> , 5:787-819 (1999)
	A64	Morgunova <i>et al.</i> , "Structure of human pro-matrix metalloproteinase-2: Activation mechanism revealed," <i>Science</i> , 284:1667-1670 (1999)
	A65	Moriconi and Mazzocchi, "Synthesis of cis- and trans-7-azabicyclo[4.2.0]octanes," <i>J. Org. Chem.</i> , 31:1372-1379 (1996)
	A66	Newman <i>et al.</i> , "The conversion of phenols to thiophenols via dialkylthiocarbamates," <i>J. Org. Chem.</i> , 31:3980-3984 (1960)
	A67	Ngu <i>et al.</i> , "A new efficient solid phase synthesis of hydroxamic acids," <i>J. Org. Chem.</i> , 62:7088-7089 (1997)
	A68	Node <i>et al.</i> , "Hard acid and soft nucleophile systems-5. ring-opening reaction of lactones to ω -alkylthio or ω -arylthio carboxylic acids with aluminum halide and thiol," <i>J. Org. Chem.</i> , 46:5163-5166 (1981)

Examiner Signature:

Date Considered

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT LIST

(Use as many sheets as necessary)

Complete if Known

Application Number	10/593,748
Filing Date	September 22, 2006
First Named Inventor	Subramaniam Ananthan
Group Art Unit	1614
Examiner Name	Unassigned

NON PATENT LITERATURE DOCUMENTS

Examiner's Initials	Cite No.	Non-Patent Citations (include Author, Title, Publisher, Relevant Pages, Date and Place of Publication)
/G.S./	A69	O'Brien <i>et al.</i> , "Structure-activity relationship and pharmacokinetic analysis for a series of potent, systemically available biphenylsulfona MMP inhibitors," <i>J. Med. Chem.</i> , 43:156-166 (2000)
	A70	Ohta <i>et al.</i> , "Effect of combination therapy with matrix metalloproteinase inhibitor MMI-166 and mitomycin C on the growth and liver metastasis of human colon cancer," <i>Japanese J. Cancer. Res.</i> , 92:688-695 (2001)
	A71	Pavlovsky <i>et al.</i> , "X-ray structure of human stromelysin catalytic domain complexed with nonpeptide inhibitors: Implications for inhibitor selectivity," <i>Protein Sci.</i> , 8:1455-1462 (1999)
	A72	Ratnikov <i>et al.</i> , "Determination of MMP activity using biotinylated gelatin," <i>Anal. Biochem.</i> , 286:149-155 (2000)
	A73	Reiter <i>et al.</i> , "Inhibition of MMP-1 and MMP-13 with phosphinic acids that exploit binding in the S ₂ pocket," <i>Bioorg. Med. Chem. Lett.</i> , 9:127-132 (1999)
	A74	Rich, In <i>Comprehensive Medicinal Chemistry</i> ; Hansch, C.; Sammes, P.; Taylor, J.B., Eds.; Pergamon Press: New York, 2:391-441 (1990)
	A75	Russo, "MMP may provide clues in multiple ailments," <i>Scientist</i> , July 5, 1999
	A76	Santos <i>et al.</i> , "Rodent pharmacokinetic and anti-tumor efficacy studies with a series of synthetic inhibitors of matrix metalloproteinases," <i>Clin. Exp. Metastasis.</i> , 15:499-508 (1997)
	A77	Seymour, "Novel anticancer agents in development: Exciting prospects and new challenges," <i>Cancer Treat. Rev.</i> , 25:301-312 (1999)
	A78	Shalinski <i>et al.</i> , "Broad antitumor and antiangiogenic activities of AG3340, a potent and selective MMP inhibitor undergoing advanced oncology clinical trials," <i>Ann. NY Acad. Sci.</i> , 878:236-270 (1999)
	A79	Siegal <i>et al.</i> , "In vitro inhibition of human sarcoma cells' invasive ability of BABIM-a novel human extracellular matrix," <i>Tumor Biology</i> , 15:326-336 (1994)
	A80	Siegal <i>et al.</i> , "Development of a human reconstituted biomatrix for quantitation of the invasiveness," <i>Cancer Lett.</i> , 69:123-132 (1993)
	A81	Singh <i>et al.</i> , "Relationship between structure and bioavailability in a series of hydroxamate based MMI," <i>Bioorg. Med. Chem. Lett.</i> , 5:337-342 (1995)
	A82	Skiles <i>et al.</i> , "MMP inhibitors for treatment of cancer," <i>Ann. Rep. Med. Chem.</i> , 35:167-176 (2000)
	A83	Skotnicki <i>et al.</i> , "Design and synthetic considerations of MMI," <i>Ann. NY Acad. Sci.</i> , 878:61-72 (1999)
	A84	SBIR Grant#R43CA71285-01 2/27/1997
	A85	Spurlino, "Structural implications in the design of matrix-metalloproteinase inhibitors." In <i>Structure-Based Drug Design</i> , Veerapandian, Ed., Marcel Dekker, Inc., N.Y., 171-189 (1997)
	A86	Stams <i>et al.</i> , "Structure of human neutrophil collagenase reveals large S1' specificity pocket," <i>Nature: Struct. Biol.</i> , 1:119-123 (1994)
	A87	Stetler-Stevenson <i>et al.</i> , "Type IV collagenases in tumor invasion and metastasis," <i>Cancer Metastasis Rev.</i> , 9:289-303 (1990)
	A88	Sticht <i>et al.</i> , "Solution structure of the glycosylated second type 2 module of fibronectin," <i>J. Mol. Biol.</i> , 276:177-187 (1998)
	A89	Stockman <i>et al.</i> , "Solution structure of SL complexed to thiadiazole inhibitors," <i>Protein Sci.</i> , 7:2281-2286 & 2281-2286 (1998)
	A90	Summers <i>et al.</i> , "Matrix metalloproteinase inhibitors and cancer," <i>Ann. Rep. Med. Chem.</i> , 33:131-140 (1998)

Examiner Signature:

Date Considered

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT LIST

(Use as many sheets as necessary)

Complete if Known

Application Number	10/593,748
Filing Date	September 22, 2006
First Named Inventor	Subramaniam Ananthan
Group Art Unit	1614
Examiner Name	Unassigned

NON PATENT LITERATURE DOCUMENTS

Examiner's Initials	Cite No.	Non-Patent Citations (include Author, Title, Publisher, Relevant Pages, Date and Place of Publication)
G.S./	A91	Tamura <i>et al.</i> , "Highly selective and orally active inhibitors of type IV collagenase (MMP-9 and MMP-2): N-sulfonylamino acid derivatives," <i>J. Med. Chem.</i> , 41:640-649 (1998)
	A92	Turbanti <i>et al.</i> , "1,2-Cyclomethylenecarboxylic monoamide hydroxamic derivatives. A novel class on non-aminoacid ACE inhibitors," <i>J. Med. Chem.</i> , 36:699-707 (1993)
	A93	Vu <i>et al.</i> , "MMP-9/gelatinase-B," In "MMPs" Park W. & Mecham R., AP, NY, pg. 115-149 (1998)
	A94	Vukicevik <i>et al.</i> , "Identification of multiple growth factors in Matrigel suggest caution in interpretation of cellular activity," <i>Exp. Cell Res.</i> , 202:1-8 (1992)
	A95	Windsor <i>et al.</i> , "Catalytic domain comparisons of human fibroblast-type collagenase, stromelysin-1 and matrilysin," <i>BBA</i> , 1334:261-272 (1999)
	A96	Williams <i>et al.</i> , "Renin inhibitors containing conformationally restricted P1-P2 dipeptides," <i>J. Med. Chem.</i> , 34:887-900 (1991)
	A97	Woessner, "MMP family," In "MMP" Park W. & Mecham R., AP, NY, pg. 1-14 (1998)
	A98	Woessner, "MMP inhibition: From the Jurassic to the third millennium," <i>Ann. NY Aca. Sci.</i> , 878:388-403 (1999)
	A99	Yu <i>et al.</i> , "MMP-2/gelatinase-A," In "MMPs" Park W. & Mecham R., AP, NY, pg. 85-113 (1998)
	A100	International Search Report and Written Opinion for PCT/US05/009263
	A101	International Preliminary Report on Patentability for PCT/US05/009263

Examiner Signature: /Golam Shameem/

Date Considered

02/22/2011

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.